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# Forecasting United States Presidential election 2016 using multiple regression models

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# FORECASTING UNITED STATES PRESIDENTIAL ELECTION 2016 USING MULTIPLE REGRESSION MODELS

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## ABSTRACT

The paper analyses economic and non-economic factors in order to develop a forecasting model for 2016 US Presidential election and predict it. The discussions on forthcoming US Presidential election mention that campaign fund amount and unemployment will be a deciding factor in the election, but our research indicates that campaign fund amount and unemployment are not significant factors for predicting the vote share of the incumbent party. But in case of non-incumbent major opposition party (challenger party) campaign fund amount does play a role. Apart from unemployment other economic factors such as inflation, exchange rate, interest rate, deficit/surplus, gold prices are also found to be insignificant. Growth of economy is found to be significant factor for non-incumbent major opposition party and not for incumbent party. The study also finds that non-economic factors such as June Gallup rating, Gallup index, average Gallup, power of period factor, military intervention, president running, percentage of white voters and youth voters voting for the party are significant factors for forecasting the vote share of either incumbent party or non-incumbent major opposition party/challenger party.

The proposed models forecasts with 95% confidence interval that Democratic party is likely to get vote share of 48.11% with a standard error of  $\pm 2.18\%$  and the non-incumbent Republican party is likely to get vote share of 40.26% with a standard error  $\pm 2.35\%$ .

## INTRODUCTION

The United States Presidential election is considered to be an extremely important event not only for the United States but also for other world economies. Many economists and political scientists have developed various models for forecasting US Presidential election. Some models take economic and non-economic factors into consideration whereas some focus on using pre-election polls or prediction market to predict the election result.

Some researchers have suggested that state of economy impacts the outcome of election. Fair (1978, 2012) has suggested various economic factors such as growth of economy, inflation, unemployment rate for predicting the US Presidential election. “*Time for change*” model given by Abramowitz (1988) considers growth of economy in the first six months of the election year as an economic factor influencing the outcome of presidential election. Litchman (2005, 2008) has also considered growth rate as an important variable.

The growth rate of economy is not, however, the only measure of the state of economy. Inflation may also be of concern to voters and therefore can play a factor influencing the outcome of the election. Fair(1978,2012) and Cuzon, Heggen and Bundrick (2000) used the growth rate of the GDP deflator as a measure of inflation and have used it to analyse the outcome of the Presidential election.

The unemployment rate is another important macroeconomic variable which was studied by the researchers to predict the elections results. Mueller (1970) used unemployment as the only economic variable in forecasting the popularity of the candidate. Monroe and Laughlin (1983) found that a 1% increase in unemployment rate results in a decrease of 6.6% points in popularity rating. Silver (2011) finds that the unemployment rate has no impact on the margin of victory (defeat). However, unemployment is one of the critical issues in most of the elections.

Fair (1978, 2012) considered a factor called “Good news” factor.

Sinha et al. (2012) analysed the other economic variables such as oil prices, healthcare budget, public deficit, gold prices, interest etc. and found these to be insignificant for predicting 2012 US election.

Recent studies have given importance to non-economic factors in predicting the election. According to Lewis-Beck and Rice (1982), Gallup rating which measures the popularity of incumbent president is one of the major non-economic variables and can be considered in forecasting model for predicting the outcome of presidential election. Lee Seigelman (1979) showed that there is a relationship between Gallup rating obtained in the June of the election year and popular vote share of the incumbent party. Gallup rating cannot be taken as a sole decisive factor and has to be supported by other economic and non-economic factors.

Abramowitz (1988) used Gallup rating, Growth of economy and Time for change factor as variables in predicting the popular vote share of the incumbent party. Time for change factor is a measure of duration of the incumbent party. Voters are less inclined to vote for a party that has been in power for two or more than two terms as they may feel that it is time to give an opportunity to the opposition party.

Voters who want to avoid uncertainty are more likely to vote for the incumbent party if the president is the candidate running for re-election (Fair 2002).

Mueller (1970) developed a model for predicting president’s popularity and concluded that international crises, scandals and wars have a significant impact on president’s popularity. Mueller also concluded that impacts of economic performance are significant only when economy’s performance is bad.

Whether the country is involved in any military intervention also impacts voter’s perception. Litchman and Keilis-Borok (1996), Fair (1978, 2012) and Hibbs (2000, 2012) used war as a non-economic variable.

Lazarsfeld, Berleson and Gaudet (1968) and Finkel (1993) examined the effect of campaigns on election outcome. Political experts believe that a large fund raised by a candidate increases the candidate’s chance of winning the election. However, some research studies such as Jacobson, G. C. (2006) indicate that, in certain cases, the candidates who spend more are less likely to win. Empirical evidence shows that incumbent candidates who spend less money are

more likely to win than those incumbent candidates who spend more money. However, challenger party is more likely to win when they spend more. It indicates that spending is more effective for challenger party.

Thus we can use a combination of various factors i.e. economic as well as non-economic to develop a regression model that can be used for predicting the outcome of 2016 US Presidential election.

In this paper, we have studied the impact of non-economic and economic factors on voting behaviour in US Presidential elections. For predicting 2016 US Presidential election, we have developed two regression models. One model predicts the incumbent party vote share and the other model predicts the challenger party vote share.

Section 2 lists out the various economic and non-economic factors that we have considered for the analysis. Section 3 analyse the influence of economic variables and non-economic variables. In Section 4 we develop the models for incumbent party and non-incumbent party and forecast 2012 US Presidential election in order to test the proposed models. Section 5 forecasts the 2016 US Presidential election using the proposed models.

## **SIGNIFIANCE OF ECONOMIC AND NON-ECONOMIC FACTORS**

After reviewing many research studies some of which are mentioned above we came to a conclusion that there are various economic and non-economic factors influencing the voter behaviour in presidential elections. In order to develop suitable regression models for Presidential forecast, we have analysed the different factors that can be used as significant variables in our proposed models. This section lists out all the economic and non-economic factors that we have considered.

### **Economic factors**

There are many factors that have the potential to affect the US Presidential election outcome. Some of the factors like unemployment, GDP, inflation, interest rate, etc. affect the perception of the voters regarding the incumbent party. Factors like budgetary deficit/surplus may tell us about strength of economy during the tenure of incumbent party. In state of budgetary deficit there is more spending so it might be viewed favourably by public similarly in budgetary surplus, there is less spending and people may not view it favourably. There are global factors like exchange rates and prices of oil and gold that may impact US economy and also the election results. Some of the economic factors that we have considered are:-

1. Growth of Economy: - We have considered the percentage change in GDP per capita in first 3 quarters of the election years as given by Fair (2006)
2. Inflation: - We have considered the magnitude of growth of GDP deflator in first 15 quarters of the regime of incumbent party as specified by Fair (2006)
3. Unemployment rate: - Annual average unemployment rate as per Bureau of labour statistics. Quadrennial change in percent points is also considered

4. Oil prices: - The inflation adjusted per barrel oil prices has been taken as a parameter
5. Healthcare budget: - Spending on social benefits by the regime as percent of GDP in the election year as per Bureau of economic analysis (2016)
6. Exchange rate: - We have considered the ratio £/\$ as exchange rate
7. Interest rate: - We have considered annual effective funds rate as specified by the Federal Reserve (2016)
8. Budgetary deficit or surplus: - The budgetary surplus is budget revenue over budget expenditure. The budgetary deficit is budget expenditure over budget revenue. The budgetary deficit or surplus is a percent of GDP as given by The White House (2016)
9. Gold prices: - We have considered gold price in dollars per ounce.

Table 6 in the appendix summarises the data about the economic variables from the year 1952 to 2016.

### **Non-economic factors**

There are many social and non-economic factors that decide the outcome of the election. One such factor is the power of period factor. If incumbent party has been in power for two or more than two terms then non-incumbent major opposition party/challenger party gets more favoured. There are also other non-economic factors that impacts voters' perception regarding incumbent party and non-incumbent major opposition party. Following are the important non-economic factors:

1. Power of period factor: It is the amount of time that the incumbent's President Party have control over the White House. It measures the difference between the elections in which the party has controlled over a White House for one term and the election in which the party has controlled the White House for two or more terms. It has two values 0 and 1

- 1, if the incumbent party was in the White House for two or more term
- 0, otherwise.

(Refer to Table 8 of Appendix)

2. Presidential Approval Rating: Percentage of American population is approving or disapproving the work done by the incumbent President. The data that we have used for this analysis is the Gallup job approval rating of the current president in the June month of the election year. In situations when the elected President resigns or passes away then the approval rating of the incumbent presiding over the current year is considered.

3. Gallup Index: Value of Gallup \_Index is given as:

- If the value of Average Gallup is less than or equal to 40; Index = 0
- If the value of Average Gallup is more than 40 but less than or equal to 60; Index = 1
- If the value of Average Gallup is more than 60; Index = 2

(Refer to Table 4 of Appendix)

4. Military Intervention: It is a variable that has the potential to influence the popularity of the incumbent President. The ratings -1, 0, and 1 are given as follows:

- If the war during Presidential term had positive effect on incumbent's popularity; rating = 1
- If the war during Presidential term had no effect on incumbent's popularity; rating = 0
- If the war during Presidential term had negative effect on incumbent's popularity; rating = -1.

(Refer to Table 2 of the Appendix)

5. Scandals: People negatively perceive any kind of scandal during incumbent's tenure. This affects the incumbent party's popularity during Presidential elections. The ratings to this variable are as follows:

- No major scandal during Presidential tenure; rating = 0
- At least one major scandal during Presidential term; rating = 1
- The scandals that lead to termination of president during his term, rating = 2

(Refer to Table 1 of the Appendix)

6. White: Since the majority population of US is white, so in our opinion the percentage of Whites voting for incumbent party or non-incumbent party can also be considered as an important factor that can affect the election outcome.

(Refer to Table 3 of the Appendix)

7. Youth: Youth may also play a factor in deciding the popularity of the Presidential candidate of the incumbent party as well as that of the non-incumbent party.

(Refer to Table 3 of the Appendix)

8. Campaign spending: This can also affect the Presidential election since the amount of money a candidate spend on Presidential campaigns sometimes decide how much are they able to win over the people. The Campaign Spending takes value as given in Table 7d of the Appendix.

(Refer to Table 7 of the Appendix)

9. Mid-term Performance: The mid-term performance is an indicator of the incumbent party's acceptance.

The variable mid-term is calculated as-

For election year "n":

$$([\text{HouseSeats}] * \text{HouseResult} + [\text{SenateSeats}] * \text{SenateResult}) / (\text{HouseSeats} + \text{SenateSeats})$$

HOUSESEATS: Democratic representative seats+ Republican representative seats during midterm election

SENATESEATS: Democratic senate seats+ Republican senate seats during midterm election

The variable HOUSERESULT signifies value as follows:

- 1,if the incumbent party has got majority vote share in the House after the midterm election
- -1, if the incumbent party has got minority vote share in the House after the midterm election
- 0, otherwise,

The variable SENATERESULT signifies value as follows-

- 1 ,if the incumbent party has got majority vote share in the Senate after the midterm election
- -1,if the incumbent party has got minority vote share in the Senate after the midterm election
- 0, otherwise

(Refer to Table 5 of the Appendix)

10. President Running: it is a variable that says if the incumbent president applies for re-election or not. It has two values: 0 and 1

- 1, if the incumbent president stands for re-election
- 0,otherwise

(Refer to Table 9 of the Appendix)

## **DATA SOURCES**

The data has been collected for the period 1952 to 2016. The data source of GDP is Fair (2006, 2008, 2012). Inflation rate is the average of the first 6 months of the corresponding election year. We have calculated inflation rate from the website [usinflationcalculator.com](http://usinflationcalculator.com). The Bureau of Labour Statistics is the data source for the unemployment data. The data on budgetary deficit/surplus is obtained from the website of the White House. The interest rate represents the yield of 3-month Treasury bills on June 1 of election year and is obtained from Economic Data of Federal Reserve Bank of St. Louis.

The major source of data for non-economic variables is the official website of the Gallup Presidential Poll. It provides the data like Gallup Rating, Average Gallup for Presidential Job Approval rating. It also provides the data for the percentage of white and youth who voted for the incumbent as well as the non-incumbent major opposition party. The data for the variables like white voters and youth voters for the election year i.e. 2016 have been taken from various opinion polls on the Gallup Website. We have referred previous paper of Sinha et al. (2012) for data on scandals, military intervention and mid-term performance. The historical vote share data of the incumbent party and the non-incumbent major opposition party/challenger party was taken from the website [uselectionatlas.org](http://uselectionatlas.org).

## METHODOLOGY

The following tables capture the regression results for various models containing economic variables and non-economic variables as independent variables and INCUMBENT\_VOTE as dependent variable. INCUMBENT\_VOTE denotes vote share of incumbent party.

### Economic factors

The following table analysed the influence of economic factors on vote share of incumbent party-

**Table A-Analysis of Influence of Economic Variables**

Model	Year	R <sup>2</sup> (%)	P-value	
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{INFLATION} + \beta_4 \text{UNEMPLOYMENT}$ RATE	1952- 2012	24.64	GROWTH_OF_ECONOMY INFLATION UNEMPLOYMENT RATE	0.3236 0.3250 0.8456
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{DEFICIT\_SURPLUS}$ $+ \beta_4 \text{HEALTHCARE BUDGET}$	1952- 2012	33.39	GROWTH_OF_ECONOMY DEFICIT_SURPLUS HEALTHCARE BUDGET	0.0693 0.5848 0.3467
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2 \text{INTEREST RATE} +$ $\beta_3 \text{INFLATION} + \beta_4 \text{EXCHANGE RATE}$	1952- 2012	30.48	INTEREST RATE INFLATION EXCHANGE RATE	0.1570 0.0511* 0.4308
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2 \text{INFLATION}$ $\beta_3 \text{EXCHANGE\_RATE}$ $+ \beta_4 \text{INTEREST\_RATE} + \beta_5 \text{OIL\_PRICES}$	1952- 2012	42.65	INFLATION EXCHANGE_RATE INTEREST_RATE OIL_PRICES	0.0326* 0.1494 0.1452 0.1546
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2 \text{INFLATION}$ $\beta_3 \text{EXCHANGE\_RATE}$ $+ \beta_4 \text{INTEREST\_RATE} + \beta_5 \text{GOLD\_PRICES}$	1952- 2012	40.42	INFLATION EXCHANGE_RATE INTEREST_RATE GOLD_PRICES	0.0241* 0.1421 0.0644 0.2027

(\* - denotes significance at 5% level value)

As per above analysis, we have found out that economic factors like growth of economy, unemployment rate, deficit/surplus, healthcare budget, interest rate, exchange rate, oil prices, gold prices are insignificant in predicting the vote share of the incumbent party. The only economic factor that is significant from the above analysis is the inflation but unfortunately in the final proposed model given below there are no economic variables that comes out to be significant.

### Non-economic factors

The following table analysed the influence of non-economic factors on vote share of incumbent party-



**Table B-Analysis of Influence of Non-Economic Variables**

Model	Year	R <sup>2</sup> (%)	P-value	
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ JUNE_GALLUP+ $\beta_3$ CAMPAIGN_SPENDING+ $\beta_4$ WHITE_INCUMBENT + $\beta_5$ YOUTH_INCUMBENT	1952-2012	95.57	JUNE_GALLUP CAMPAIGN_SPENDING WHITE_INCUMBENT YOUTH_INCUMBENT	0.0037* 0.9257 0.0000* 0.0023*
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ AVERAGE_GALLUP+ $\beta_3$ GALLUP_INDEX+ $\beta_4$ POWER_OF_PERIOD_FACTOR	1952-2012	56.9	AVERAGE_GALLUP GALLUP_INDEX POWER_OF_PERIOD_FACTOR	0.0087* 0.0248* 0.0214*
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ GALLUP_INDEX+ $\beta_3$ JUNE_GALLUP+ $\beta_4$ POWER_OF_PERIOD_FACTOR	1952-2012	43.49	GALLUP_INDEX JUNE_GALLUP POWER_OF_PERIOD_FACTOR	0.0218* 0.0002* 0.0883
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ JUNE_GALLUP+ $\beta_3$ SCANDAL+ $\beta_4$ GALLUP_INDEX	1952-2012	88.08	JUNE_GALLUP SCANDAL GALLUP_INDEX	0.0000* 0.0027* 0.0024*
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ PRESIDENT_RUNNING+ $\beta_3$ MID_TERM+ $\beta_4$ POWER_OF_PERIOD_FACTOR+ $\beta_5$ SCANDAL+	1952-2012	66.54	PRESIDENT_RUNNING MID_TERM POWER_OF_PERIOD_FACTOR SCANDAL	0.0309* 0.0266* 0.0443* 0.2717
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ JUNE_GALLUP+ $\beta_3$ WHITE_INCUMBENT+ $\beta_4$ POWER_OF_PERIOD_FACTOR+ $\beta_5$ YOUTH_INCUMBENT	1952-2012	96.5	JUNE_GALLUP WHITE_INCUMBENT POWER_OF_PERIOD_FACTOR YOUTH_INCUMBENT	0.0025* 0.0000* 0.1142 0.0030*
INCUMBENT_VOTE_SHARE = $\beta_1 + \beta_2$ JUNE_GALLUP+ $\beta_3$ WHITE_INCUMBENT+ $\beta_4$ MILITARY_INTERVENTION	1952-2012	96.26	JUNE_GALLUP WHITE_INCUMBENT MILITARY INTERVENTION	0.0017* 0.0001* 0.8669

(\*- denotes significance at 5% level value)

As per above analysis June Gallup rating, white incumbent (proportion of white voters voting for incumbent), youth incumbent (proportion of youth voters voting for incumbent), average Gallup, Gallup index, power of period factor, midterm performance, president running are found to be significant factors influencing the incumbent's vote share.

Since there exists multi-collinearity between the Average Gallup and Gallup index, we consider the Gallup Index prior to the election in forecasting the election. The other significant factors considered in incumbent vote share model are June Gallup rating, white incumbent, youth incumbent and period of power factor.

The table below gives the regression results for various models containing economic variables and non-economic variables as independent variables and NON-INCUMBENT\_MAJOR OPPOSITION\_VOTE as dependent variable. NON-INCUMBENT\_MAJOR OPPOSITION\_VOTE denotes vote share of non-incumbent major opposition party i.e. challenger party.

### Economic factors

The following table analysed the influence of economic factors on vote share of non-incumbent major opposition party (challenger party)-

**Table C-Analysis of Influence of Economic Variables**

Model	Year	R <sup>2</sup> (%)	P-value	
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{INFLATION} + \beta_4 \text{DEFICIT\_SURPLUS}$	1952- 2012	40.71	GROWTH_OF_ECONOMY INFLATION DEFICIT_SURPLUS	0.0285* 0.9761 0.5219
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{DEFICIT\_SURPLUS}$ $+ \beta_4 \text{UNEMPLOYMENT RATE}$	1952- 2012	46.67	GROWTH_OF_ECONOMY DEFICIT_SURPLUS UNEMPLOYMENT RATE	0.0074* 0.1924 0.2691
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 +$ $\beta_2 \text{INTEREST RATE} + \beta_3 \text{INFLATION} +$ $\beta_4 \text{GROWTH\_OF\_ECONOMY}$	1952- 2012	46.23	INTEREST RATE INFLATION GROWTH_OF_ECONOMY	0.2155 0.2936 0.1699
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{DEFICIT\_SURPLUS}$ $+ \beta_4 \text{CHANGE IN UNEMPLOYMENT}$ RATE	1952- 2012	40.87	GROWTH_OF_ECONOMY DEFICIT_SURPLUS CHANGE IN UNEMPLOYMENT RATE	0.0138* 0.4753 0.8565
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2 \text{GROWTH\_OF\_ECONOMY} +$ $\beta_3 \text{EXCHANGE\_RATE} + \beta_4 \text{GOLD\_PRICES}$	1952- 2012	39.37	GROWTH_OF_ECONOMY EXCHANGE_RATE GOLD_PRICES	0.0301* 0.7624 0.9123

(\*- denotes significance at 5% level value)

As per above analysis, we have found out that economic factors like unemployment rate, deficit/surplus, healthcare budget, interest rate ,exchange rate, oil prices, gold prices are insignificant in predicting the vote share of non- incumbent major opposition party. The only economic factor that is significant from the above analysis is the growth of economy.

### Non-economic factors

The following table analysed the influence of non-economic factors on vote share of non-incumbent major opposition party (challenger party)-

**Table D-Analysis of Influence of Non-Economic Variables**

Model	Year	R <sup>2</sup> (%)	P-value	
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ AVG_GALLUP+ $\beta_3$ CAMPAIGN_SPENDING + $\beta_4$ MILITARY INTERVENTION + $\beta_5$ YOUTH_NON-INCUMBENT	1952- 2012	81.98	AVG_GALLUP CAMPAIGN_SPENDING MILITARY INTERVENTION YOUTH_NON-INCUMBENT	0.0088* 0.0054* 0.0151* 0.0043*
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ AVERAGE_GALLUP+ $\beta_3$ MILITARY INTERVENTION+ $\beta_4$ PERIOD_OF_POWER_FACTOR+ $\beta_5$ YOUTH_NON-INCUMBENT	1952- 2012	72.59	AVERAGE_GALLUP MILITARY INTERVENTION POWER_OF_PERIOD_FACTOR YOUTH_NON-INCUMBENT	0.0165* 0.1112 0.0691 0.0665
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ GALLUP_INDEX+ $\beta_3$ JUNE_GALLUP	1952- 2012	44.88	GALLUP_INDEX JUNE_GALLUP POWER_OF_PERIOD_FACTOR	0.7727 0.0366* 0.0883
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ JUNE_GALLUP+ $\beta_3$ SCANDAL+ $\beta_4$ GALLUP_INDEX	1952- 2012	52.05	JUNE_GALLUP SCANDAL GALLUP_INDEX	0.0668 0.2051 0.9007
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ PRESIDENT_RUNNING+ $\beta_3$ MID_TERM+ $\beta_4$ AVG_GALLUP	1952- 2012	44.88	PRESIDENT_RUNNING MID_TERM AVG_GALLUP	0.2681 0.6667 0.0187*
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ AVG_GALLUP+ $\beta_3$ WHITE_NON-INCUMBENT+ $\beta_4$ PERIOD_OF_POWER_FACTOR+ $\beta_5$ YOUTH_NON-INCUMBENT	1952- 2012	91.22	AVG_GALLUP WHITE_NON-INCUMBENT POWER_OF_PERIOD_FACTOR YOUTH_NON-INCUMBENT	0.0300* 0.0001* 0.1146 0.0007*
NON-INCUMBENT_MAJOR OPPOSITION_VOTE = $\beta_1 + \beta_2$ AVG_GALLUP+ $\beta_3$ WHITE_NON-INCUMBENT+ $\beta_4$ MILITARY_INTERVENTION+	1952- 2012	67.13	AVG_GALLUP WHITE_NON-INCUMBENT MILITARY INTERVENTION	0.0499* 0.0107* 0.5676

(\*- denotes significance at 5% level value)

From the above analysis, we have found out that significant variables are June Gallup, average Gallup, white non-incumbent (proportion of white voters voting for challenger party), youth non-incumbent (proportion of youth voters voting for challenger party) and campaign spending. The other two variables that have been considered in our proposed model for non-incumbent major opposition party vote share are president running and military intervention.

## PROPOSED MODEL

We have developed two regression models for predicting the 2016 US Presidential election.

- The first model, **Incumbent vote share model**, will be used to predict the incumbent party's vote share in forthcoming presidential election.
- The second model, **Non-incumbent vote share model**, will be used to predict the non-incumbent major opposition party's (challenger party's) vote share.

### Incumbent vote share model

After analysing the influence of economic variable and non-economic variable on incumbent party's vote share, the following model is proposed for forecasting the vote share of incumbent party in the forthcoming presidential election:

$$\text{INCUMBENT\_VOTE\_SHARE} = \beta + \beta_1 \text{JUNE\_GALLUP} + \beta_2 \text{WHITE\_INCUMBENT} + \beta_3 \text{POWER\_OF\_PERIOD\_FACTOR} + \beta_4 \text{YOUTH\_INCUMBENT} + \beta_5 \text{GALLUP\_INDEX} + \text{ERROR}$$

According to our model the following factors can be used to forecast the vote share of incumbent party:

- June Gallup
- White Incumbent (proportion of white voters voting for incumbent),
- Youth Incumbent (proportion of youth voters voting for incumbent)
- Gallup Index
- Power of Period Factor

The proposed model exhibits  $R^2$  of 97.8% and adjusted  $R^2$  of 96.75% for the period 1952 to 2012. At 5% level of significance all independent variables in the above model are significant.

Estimation result of the model is given in the following table:

**Table-E-Proposed estimated model using data from 1952-2012 for forecasting the vote share of incumbent party of 2016 US Presidential Election**

Dependent Variable: INCUMBENT_VOTE_SHARE				
Method: Least Squares				
Sample: 1952 2012				
Included observations: 16				
Variable	Coefficient	Std. error	t-statistic	Probability
C	15.12486	3.008317	5.027680	0.0005
JUNE_GALLUP_RATING	0.248383	0.049811	4.986538	0.0005
WHITE_INCUMBENT	0.370203	0.041302	8.963423	0.0000
YOUTH_INCUMBENT	0.138373	0.055866	2.476887	0.0327
GALLUP_INDEX	-1.972237	0.794733	-2.481635	0.0325
PERIOD OF POWER_FACTOR	-1.998586	0.760170	-2.629130	0.0252
Parameters		Value		
R-squared		0.978358		
Adjusted R-squared		0.967538		
S.E. of regression		1.257143		
Sum squared resid		15.80408		
Log likelihood		-22.60445		
F-statistic		90.41482		
Prob(F-statistic)		0.000000		
Mean dependent var		49.95313		
S.D. dependent var		6.977420		
Akaike info criterion		3.575557		
Schwarz criterion		3.865277		
Hannan-Quinn criter.		3.590393		
Durbin-Watson stat		1.474404		

**Applying the incumbent vote share model for 2012 US President Election**

The 2012 presidential election was fought between Barack Obama and Mitt Romney. We have used the following data for the independent variables for the year 2012:

Independent variables	Values
June Gallup	46.4
Power_Of_Period_Factor	0
White Incumbent	44.0
Youth Incumbent	62
Gallup Index	1.0

Using data from 1952 to 2008 the forecasting model for 2012 election has the following parameters. The table below shows it in details:

**Table-F-Proposed estimated model using data from1952-2008 for forecasting the vote share of incumbent party for 2012 US Presidential Election**

Dependent Variable: INCUMBENT_VOTE_SHARE				
Method: Least Squares				
Sample: 1952 2008				
Included observations: 15				
Variable	Coefficient	Std. error	t-statistic	Probability
C	15.22690	2.806077	5.426403	0.0004
JUNE_GALLUP_RATING	0.268690	0.048193	5.575290	0.0003
WHITE_INCUMBENT	0.386783	0.039917	9.689688	0.0000
YOUTH_INCUMBENT	0.098149	0.057977	1.692879	0.1247
GALLUP_INDEX	-2.133625	0.748107	-2.852034	0.0190
PERIOD OF POWER_FACTOR	-1.739616	0.727558	-2.391035	0.0405
Parameter	Value			
R-squared	0.983035			
Adjusted R-squared	0.973610			
S.E. of regression	1.172319			
Sum squared resid	12.36898			
Log likelihood	-19.83764			
F-statistic	104.2988			
Prob(F-statistic)	0.000000			
Mean dependent var	49.88267			
S.D. dependent var	7.216421			
Akaike info criterion	3.445018			
Schwarz criterion	3.728238			
Hannan-Quinn criter.	3.442001			
Durbin-Watson stat	1.495222			

The model predicts 48.66% vote share for Democratic Party which was incumbent party in 2012 presidential election. The actual vote share was 51.01%. Therefore we can say that our proposed model when applied on data from 1952-2008 gives an error of 2.35%. It under forecast the vote share of incumbent party i.e. Democratic Party by 2.35%. The forecast has following statistics:

- Theil inequality coefficient-0.010499
- Root mean square error-1.056882
- Mean Absolute error-0.873613

**Non-incumbent vote share model**

After analysing the influence of economic variables and non-economic variables on non-incumbent major opposition party's vote share, the following model is proposed for forecasting the vote share of non-incumbent major opposition /challenger party in the forthcoming presidential election-

$$\text{NON-INCUMBENT\_MAJOR\_OPPOSITION\_VOTE\_SHARE} = \beta_0 + \beta_1 \text{GROWTH\_OF\_ECONOMY} + \beta_2 \text{CAMPAIGN\_SPENDING} + \beta_3 \text{AVERAGE\_GALLUP\_RATING} + \beta_4 \text{YOUTH\_NON-INCUMBENT} + \beta_5 \text{MILITARY\_INTERVENTION} + \beta_6 \text{PRESIDENT\_RUNNING} + \text{ERROR}$$

According to our model the following factors can be used to forecast the vote share of non-incumbent major opposition party in US presidential election:

- Growth of Economy
- Average Gallup rating
- Youth non incumbent
- Military intervention
- President running
- Campaign Spending

The proposed model exhibits  $R^2$  of 93.87% and adjusted  $R^2$  of 89.78% for the period 1952 to 2012. At 5% level of significance all independent variables in the above model are significant. The parameters of model can be summarized in the table given below:

**Table-G-Proposed estimated model using data from 1952-2012 for forecasting the vote share of Non-Incumbent major opposition party for 2016 US Presidential election**

Dependent Variable: NON_INCUMBENT_MAJOR_OPPO				
Method: Least Squares				
Sample: 1952 2012				
Included observations: 16				
Variable	Coefficient	Std. error	t-statistic	Probability
C	52.28583	3.897665	13.41465	0.0000
GROWTH_OF_ECONOMY	-0.618585	0.189012	-3.272730	0.0096
AVG_GALLUP_RATING	-0.215952	0.045275	-4.769750	0.0010
YOUTH_NON_INCUMBENT	0.222795	0.052211	4.267216	0.0021
MILITARY_INTERVENTION	2.461639	0.740837	3.322782	0.0089
PRESIDENT_RUNNING	-2.569241	1.093680	-2.349172	0.0434
CAMPAIGN_SPENDING	-2.400946	0.827154	-2.902659	0.0175
Parameter	Value			
R-squared	0.938709			
Adjusted R-squared	0.897849			
S.E. of regression	1.674743			
Sum squared resid	25.24287			
Log likelihood	-26.35066			
F-statistic	22.97360			
Prob(F-statistic)	0.000056			
Mean dependent var	45.82437			
S.D. dependent var	5.239949			
Akaike info criterion	4.168832			
Schwarz criterion	4.506840			
Hannan-Quinn criter.	4.186141			
Durbin-Watson stat	2.112653			

**Applying the non-incumbent vote share model for 2012 US President Election**

The 2012 presidential election was fought between Barack Obama and Mitt Romney. The non-incumbent major opposition party was Republican Party. Mitt Romney was Republican candidate. We have used the following data for the independent variables for the year 2012:

<b>Independent variables</b>	<b>Values</b>
Growth of economy	1.62
Campaign spending	1.00
Average Gallup Rating	49.0
Youth Non-Incumbent	38
Military Intervention	1
President Running	1

Using data from 1952 to 2008 the forecasting model for 2012 election has the following parameters. The table below shows it in details:

**Table-H- Proposed estimated model using data from1952-2008 for forecasting the vote share of Non-Incumbent major opposition party for 2012 US Presidential Election**

Dependent Variable: NON_INCUMBENT_MAJOR_OPPO				
Method: Least Squares				
Sample: 1952 2008				
Included observations: 15				
Variable	Coefficient	Std. error	t-statistic	Probability
C	51.70936	4.450414	11.61900	0.0000
GROWTH_OF_ECONOMY	-0.624382	0.199830	-3.124561	0.0141
AVG_GALLUP_RATING	-0.211343	0.049627	-4.258656	0.0028
CAMPAIGN_SPENDING	-2.385037	0.872511	-2.733532	0.0257
MILITARY_INTERVENTION	2.346373	0.852595	2.752036	0.0250
PRESIDENT_RUNNING	-2.558799	1.152367	-2.220472	0.0571
YOUTH_NON_INCUMBENT	0.228712	0.057751	3.960293	0.0042
Parameter	Value			
R-squared	0.939283			
Adjusted R-squared	0.893746			
S.E. of regression	1.763967			
Sum squared resid	24.89265			
Log likelihood	-25.08300			
F-statistic	20.62665			
Prob(F-statistic)	0.000185			
Mean dependent var	45.73600			
S.D. dependent var	5.411506			
Akaike info criterion	4.277733			
Schwarz criterion	4.608156			
Hannan-Quinn criter.	4.274213			
Durbin-Watson stat	1.739372			



The model predicts 46.44% vote share for Republican Party in 2012 presidential election. The actual vote share was 47.15%. Therefore we can say that our proposed model when applied on data from 1952-2008 gives an error of 0.71%. It under forecasted the vote share of non-incumbent party i.e. Republican Party by 0.71%. The forecast has following statistics-

- Theil inequality coefficient-0.013674
- Root mean square error-1.260034
- Mean Absolute error-1.011850

## **FORECASTING 2016 US PRESIDENT ELECTION**

The 2016 Presidential election is being contested between Democratic party candidate Hilary Clinton and Republican party candidate Donald Trump.

### **Forecasting vote percentage share of incumbent Democratic Party candidate Hillary Clinton**

We have used the following data for the independent variables for the year 2016-

<b>Independent variables</b>	<b>Values</b>
June Gallup	51.6
Power_Of_Period_Factor	1
White Incumbent	42.36
Youth Incumbent	61.11
Gallup Index	1

The Proposed Incumbent vote share model forecasts that the vote percentage share of Democratic candidate Hillary Clinton is likely to be 48.11% in the forthcoming Presidential election. The forecast has following statistics:

- The inequality coefficient-0.009859
- Root mean square error-0.993859
- Mean Absolute error-0.862879

Thus we conclude that with 95% confidence level, the vote share of Democratic Party candidate Hilary Clinton will be 48.11% with standard error of  $\pm 2.18\%$ .

### **Forecasting vote percentage share of non-incumbent Republican Party candidate Donald Trump**

We have used the following data for the independent variables for the year 2016

<b>Independent variables</b>	<b>Values</b>
Growth of economy	1.067
Campaign spending	3
Average Gallup Rating	48.0
Youth Non-Incumbent	38.88
Military Intervention	-1
President Running	0

The Proposed Non-Incumbent vote share model forecast that the vote percentage share of Republican candidate Donald Trump is likely to be 40.26% in the forthcoming Presidential election. The forecast has following statistics:

- Theil inequality coefficient-0.013624
- Root mean square error-1.256057
- Mean Absolute error-1.011755

Thus we conclude that with 95% confidence level, the vote share of Republic Party candidate Donald Trump will be 40.29% with a standard error of  $\pm 2.35\%$ .

Summarizing the results of both the model above we conclude that Democratic Party candidate Hilary Clinton will win the 2016 US Presidential election.

## CONCLUSION

As per the above two proposed models for the incumbent and the non-incumbent we have found out that the incumbent party i.e. Democratic Party will get vote share of 48.11% with a standard error of  $\pm 2.18\%$  and the non-incumbent major opposition Republican Party will get vote share of 40.26% with a standard error of  $\pm 2.35\%$ . The remaining vote share will go to other parties contesting the election. Thus our research predicts a victory for the Democratic Party candidate Hillary Clinton.

We have concluded the following characteristics of US Presidential election:

- **Importance of economic variable :**

According to our research, economic variables such as interest rates, unemployment rates, budget deficits/surpluses, exchange rates, oil prices, gold prices, healthcare budgets are not significant factors for predicting vote share of the incumbent party or the non-incumbent party. GDP growth rate is significant for determining vote share of the non-incumbent party (challenger party) and not for determining vote share of the incumbent party.

- **Importance of non-economic variable :**

According to our research, non-economic variables such as percentage of white voters voting for incumbent party, percentage of youth voters voting for incumbent party, Gallup index, power of period factor and June Gallup are significant factors and impacts perception of voters towards the incumbent party. In the case of challenger party, non-economic variables such as Average Gallup rating, the percentage of youth voters voting for the challenger party, military intervention, President running and campaign spending are significant factors.

## REFERENCES

Abramowitz A. I. (1988). An Improved Model for Predicting the Outcomes of Presidential Elections. *PS: Political Science and Politics*, 21 4, 843-847

Bureau of Labor Statistics. (2012a). Labor Force Statistics from the Current Population Survey retrieved from [http://www.bls.gov/cps/cps\\_htgm.htm#unemployed](http://www.bls.gov/cps/cps_htgm.htm#unemployed).

Bureau of Labor Statistics. (2012b). Labor Force Statistics from the Current Population Survey retrieved from [http://www.bls.gov/cps/prev\\_yrs.htm](http://www.bls.gov/cps/prev_yrs.htm).

Bureau of Economic Analysis. (2012). Table 3.12. Government Social Benefits, retrieved from <http://www.bea.gov/national/index.htm#gdp>.

Campbell, J. E. (1992). Forecasting the Presidential Vote in the States. *American Journal of Political Science*, 36 2,386-407.

Cuzán, A. G., Heggen R.J., & Bundrick C.M. (2000). Fiscal policy, economic conditions, and terms in office: simulating presidential election outcomes. In *Proceedings of the World Congress of the Systems Sciences and ISSS International Society for the Systems Sciences*, 44th Annual Meeting, July 16–20, Toronto, Canada.

Fair, R.C. (2002) *Predicting Presidential election and other things* Second Edition. Stanford: Stanford University Press.

Fair, R.C. (2006). The Effect of Economic Events on Votes for President: 2004 Update. Retrieved from: <http://fairmodel.econ.yale.edu/RAYFAIR/PDF/2006CHTM.HTM>

Fair, R.C. (2008). 2008 Post Mortem. Retrieved from: <http://fairmodel.econ.yale.edu/vote2008/index2.htm>

Fair, R. C. (2012). Vote-Share Equations: November 2010 Update. Retrieved from: <http://fairmodel.econ.yale.edu/vote2012/index2.htm>

Fair, R.C. (2016). Vote-Share Equations: November 2014 Update, retrieved from <http://fairmodel.econ.yale.edu/vote2016/index2.htm>.

Federal Reserve (2016) Historical data retrieved from <http://www.federalreserve.gov/releases/h15/data.htm>.

Finkel, Steven E (1993). “Re-examining the minimal effects model in recent Presidential campaign” *The Journal of politics*, Vol. 55, No. 1 (Feb 1993), pp. 1-21.

Gallup Presidential Poll. (2016). Presidential Job Approval Centre, retrieved from <http://www.gallup.com/poll/124922/presidential-approval-center.aspx>.

Hibbs D. A. (2000). Bread and Peace voting in U.S. presidential elections. *Public Choice*, 104, 149–180.

- Hibbs D. A. (2012). Obama's Re-election Prospects Under 'Bread and Peace' Voting in the 2012 US Presidential Election. retrieved from: [http://www.douglashibbs.com/HibbsArticles/HIBBS\\_OBAMA-REELECT-31July2012r1.pdf](http://www.douglashibbs.com/HibbsArticles/HIBBS_OBAMA-REELECT-31July2012r1.pdf)
- International Monetary Fund. (2010). Historical Public Debt Database, retrieved from <http://www.imf.org/external/pubs/ft/wp/2010/data/wp10245.zip>.
- InflationData.com. (2012). Historical Crude Oil Prices (Table). Retrieved from [http://inflationdata.com/inflation/Inflation\\_Rate/Historical\\_Oil\\_Prices\\_Table.asp](http://inflationdata.com/inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp).
- Jacobson G.C. (2006), Measuring Campaign spending effects in US house elections, Capturing campaign effects, 199-220
- Lewis-Beck, M. S. & Rice, T. W. (1982). Presidential Popularity and Presidential Vote. *The Public Opinion Quarterly*, 46 4, 534-537.
- Lichtman, A. J., and Keilis-Borok, V. I. (1981). "Pattern Recognition Applied to Presidential Elections in the United States, 1860-1980: Role of Integral Social, Economic and Political Traits," *Proceedings of the National Academy of Science*, Vol. 78, No. 11, pp. 7230-7234
- Lazarsfeld, Berleson and Gaudet (1968) *The People's Choice: how the voter make up his mind in presidential campaign* New York: Columbia University Press
- Monroe K R and Laughlin D.M.(1983), Economic influences on presidential popularity among key political and socioeconomic groups: A review of the evidence and some new findings. *Political behaviour*, 5, 309-345
- Mueller J.E.(1970), Presidential Popularity from Truman to Johnson. *The American Political science review*, 64, 18-34. 22.
- Sinha, Pankaj & Sharma, Aastha & Singh, Harsh Vardhan, (2012). "Prediction for the 2012 United States Presidential Election using Multiple Regression Model," *Journal of prediction markets*,62,77-977.
- Sinha, Pankaj & Thomas, Ashley Rose & Ranjan, Varun, (2012). "Forecasting 2012 United States Presidential election using Factor Analysis, Logit and Probit Models," MPRA Paper 42062, University Library of Munich, Germany.
- Sigelman, L., (1979). Presidential popularity and presidential elections. *Public Opinion Quarterly*,43, 532-34.
- Silver, N. (2011). On the Maddeningly Inexact Relationship Between Unemployment and Re-Election, retrieved from <http://fivethirtyeight.blogs.nytimes.com/2011/06/02/on-the-maddeningly-inexact-relationship-between-unemployment-and-re-election/>.

## APPENDIX

**Table 1-Scandals**

Election Year	Incumbent President	Scandals	Scandal Rating
1952	Harry.S.Truman	Continuous accusations of spies in the US Govt; Foreign policies: Korean war; Indo China war; White house renovations; Steel and coal strikes; Corruption charges	1
1956	Dwight.D.Eisenhower	None	0
1960	Dwight.D.Eisenhower	U-2 Spy Plane Incident; Senator Joseph R. McCarthy Controversy; Little Rock School Racial Issues	1
1964	John.F.Kennedy	Extra Marital Relationships	0
	Lyndon.B.Johnson	None	
1968	Lyndon.B.Johnson	Vietnam war; Urban riots; Phone Tapping	1
1972	Richard Nixon	Nixon shock	0
1976	Richard Nixon	Watergate Scandal	2
	Gerald Ford	Nixon Pardon	
1980	Jimmy Carter	Iran hostage crisis; 1979 energy crisis; Boycott of the Moscow Olympics	1
1984	Ronald Regan	Tax cuts and budget proposals to expand military spending	0
1988	Ronald Regan	Iran-Contra affair; Multiple corruption charges against high ranking officials	1
1992	George.H.W.Bush	Renegation on election promise of no new taxes; "Vomiting Incident"	1
1996	Bill Clinton	Firing of White House staff; "Don't ask, don't tell" policy	1
2000	Bill Clinton	Lewinsky Scandal	2
2004	George.W.Bush	Poor handling of Katrina Hurricane-None	0
2008	George.W.Bush	Midterm dismissal of 7 US attorneys; Guantanamo Bay Controversy and torture	1
2012	Barack Obama	None	0
2016	Barack Obama	None	0

(Source: Sinha(2012), Prediction For The 2012 United States Presidential Election Using Multiple Regression Model and our research)

**Table 2-Military Intervention**

Election Year	Incumbent President	Military Intervention	War Rating
1952	Harry.S.Truman	Korean war	-1
1956	Dwight.D.Eisenhower	Ended Korean war	1
1960	Dwight.D.Eisenhower	None	0
1964	John.F.Kennedy	Bay of Pigs, Cuban Missile Crisis, Vietnam	-1
	Lyndon.B.Johnson	Vietnam	
1968	Lyndon.B.Johnson	Vietnam, Israel	-1
1972	Richard Nixon	Vietnam	-1
1976	Richard Nixon	Vietnam	1
	Gerald Ford	Vietnam(End)	
1980	Jimmy Carter	None	0
1984	Ronald Regan	Cold war	0
1988	Ronald Regan	Cold war	0
1992	George.H.W.Bush	Panama, Gulf war, Somalia	-1
1996	Bill Clinton	Somalia, Bosnia	0
2000	Bill Clinton	Serbians(Yugoslavia)	0
2004	George.W.Bush	Afghanistan, Iraq	1
2008	George.W.Bush	Afghanistan, Iraq	-1
2012	Barack Obama	Ended Iraq war, Increased presence in Afghanistan, Military intervention in Libya	1
2016	Barack Obama	Syria war; War against ISIS	-1

(Source: Sinha(2012), Prediction For The 2012 United States Presidential Election Using Multiple Regression Model and our Research)

**Table 3-Demographics**

Election Year	% of whites voted for incumbent party	% of whites voted for non-incumbent opposition party	%of youth (18-29) voted for incumbent party	%of youth (18-29) voted for non-incumbent opposition party
1952	43	57	51	49
1956	59	41	57	43
1960	51	49	45	54
1964	59	41	64	36
1968	38	47	47	38
1972	68	32	52	48
1976	52	46	45	53
1980	36	56	47	41
1984	66	34	60	40
1988	59	41	63	37
1992	41	39	37	40
1996	46	45	54	30
2000	43	55	47	47
2004	56	44	40	60
2008	55	45	39	61
2012	44	56	62	38
2016	42.36*	57.63*	61.11*	38.88*

(Source: Gallup.com

\*-Denotes estimated values from opinion poll on Gallup.com)

**Table 4-June Gallup Rating**

Election Year	Incumbent president	Period Of Measurement	Rating	June Gallup rating	Average Gallup rating	Gallup index
1952	Harry.S.Truman	May 29-June3	31	31.5	36.5	0
		June 14-June 19	32			
1956	Dwight.D.Eisenhower	May 30- June 4	71	72	69.6	2
		June14-19	73			
1960	Dwight.D.Eisenhower	June15-20	61	59	60.5	2
		June29- July 4	57			
1964	Lydon.B.Johnson	June3-15	74	74	74.2	2
		June24-29	74			
1968	Lydon.B.Johnson	June12-17	42	41	50.3	1
		June25-30	40			
1972	Richard Nixon	June15-18	59	57.5	55.8	1
		June25-30	56			
1976	Gerald Ford	June10-13	45	45	47.2	1
1980	Jimmy Carter	May29-June1	38	33.6	45.5	1
		June12-15	32			
		June26-29	31			
1984	Ronald Regan	June5-7	55	54	50.3	1
		June21-24	54			
		June28-July1	53			
1988	Ronald Regan	June9-12	41	50	55.3	1
		June23-26	48			
		June30-July6	51			
1992	George.H.W.Bush	June3-13	37	37.3	60.9	2
		June25-29	38			
1996	Bill Clinton	June17-18	58	55	49.6	1
		June26-29	52			
2000	Bill Clinton	June5-6	60	57.5	60.6	2
		June21-24	55			
2004	George.W.Bush	June2-5	49	48.5	62.2	2
		June20-22	48			
2008	George.W.Bush	June8-11	30	29	36.5	0
		June14-18	28			
2012	Barack Obama	May27-June2	46	46.4	49	1
		June3-9	47			
		June10-16	46			
		June17-23	46			
		June24-30	47			
2016	Barack Obama	May30-June5	51	51.6	48	1
		June6-12	53			



	June13-19	53		
	June20-26	50		
	June27-July3	51		

(Source: Sinha(2012), Prediction For The 2012 United States Presidential Election Using Multiple Regression Model and Gallup Presidential poll 2016)

**Table 5-Midterm Performance**

Election Year	Incumbent Party	Midterm election Year	House Seats		House Result	Senate Seats		Senate Result	Midterm Values
			Democrats	Republicans		Democrats	Republicans		
1952	Democratic	1948	263	171	1	54	42	1	1
		1950	234	199		48	47		
1956	Republican	1952	213	221	-1	46	48	-1	-1
		1954	232	203		48	47		
1960	Republican	1956	234	201	-1	49	47	-1	-1
		1958	283	153		64	34		
1964	Democratic	1960	262	175	1	64	36	1	1
		1962	258	176		67	33		
1968	Democratic	1964	295	140	1	68	32	1	1
		1966	248	187		64	36		
1972	Republican	1968	243	192	-1	58	42	-1	-1
		1970	255	180		54	44		
1976	Republican	1972	242	192	-1	56	42	-1	-1
		1974	291	144		61	37		
1980	Democratic	1976	292	143	1	61	38	1	1
		1978	277	158		58	41		
1984	Republican	1980	242	192	-1	46	53	1	-0.63
		1982	269	166		46	54		
1988	Republican	1984	253	182	-1	47	53	-1	-0.63
		1986	258	177		55	45		
1992	Republican	1988	260	175	-1	55	45	-1	-1
		1990	267	167		56	44		
1996	Democratic	1992	258	176	-1	57	43	-1	-1
		1994	204	230		48	52		
2000	Democratic	1996	207	226	-1	45	55	-1	-1
		1998	211	223		45	55		
2004	Republican	2000	212	221	1	50	50	1	1
		2002	204	229		48	51		
2008	Republican	2004	202	232	-1	44	55	0	-0.82
		2006	233	202		49	49		
2012	Democratic	2008	256	178	-1	55	41	1	-0.63
		2010	193	242		51	47		
2016	Democratic	2012	201	234	-1	53	45	1	-0.63
		2014	188	247		44	54		

(Source: Sinha(2012), Prediction For The 2012 United States Presidential Election Using Multiple Regression Model )

**Table 6-Economic Variables**

Year	Growth of economy <sup>a</sup>	Inflation <sup>b</sup>	Unemployment rate <sup>c</sup>	Change in unemployment rate <sup>d</sup>	\$/barrel oil prices inflation adjusted <sup>e</sup>
1952	0.691	2.5	3	-0.8	27.21
1956	-1.451	0.81666667	4.1	1.1	24.64
1960	0.377	1.58333333	5.5	1.4	25.56
1964	5.109	1.4	5.2	-0.3	23.26
1968	5.043	3.91666667	3.6	-1.6	22.84
1972	5.914	3.28333333	5.6	2	21.55
1976	3.751	6.21666667	7.7	2.1	20.33
1980	-3.597	14.4	7.1	-0.6	54.37
1984	5.44	4.43333333	7.5	0.4	107.36
1988	2.178	3.93333333	5.5	-2	65.36
1992	2.662	2.98333333	7.5	2	29.73
1996	3.121	2.8	5.4	-2.1	32.39
2000	1.219	3.28333333	4	-1.4	30.78
2004	2.69	2.33333333	5.5	1.5	37.54
2008	0.22	4.23333333	5.8	0.3	47.04
2012	1.62	2.36666667	8.075	2.275	100
2016	1.066667	1.06666667	-7.0083333	NA	NA

Year	£/\$ Exchange rate <sup>f</sup>	Interest rate <sup>g</sup>	Deficit/Surplus (%) <sup>h</sup>	Gold_price <sup>i</sup>
1952	2.793	1.7	-0.4	34.6
1956	2.793	2.49	0.9	34.99
1960	2.809	2.46	0.1	35.27
1964	2.793	3.48	-0.9	35.1
1968	2.392	5.52	-2.8	39.31
1972	2.5	3.91	-1.9	58.42
1976	1.805	5.41	-4.1	124.74
1980	2.326	7.07	-2.6	615
1984	1.337	9.87	-4.7	361
1988	1.783	6.46	-3	437
1992	1.767	3.66	-4.5	343.82
1996	1.563	5.09	-1.3	387.81
2000	1.515	5.69	2.3	279.11
2004	1.832	1.27	-3.4	409.72
2008	1.852	1.86	-3.1	871.96
2012	1.571	0.09	-6.8	1668.98
2016	NA	NA	NA	1160.6

(Source: a:Fair (2006, 2008, 2012, 2016); b:Fair (2006, 2012, 2016); c: Bureau of Labor Statistics; e: InflationData.com (2016); f:Bank of England; g:Federal Reserve; h:The White House (2015); i:United States National Mining Association)

**Table 7-Presidential Campaign Spending**

Election year	Incumbent	Presidential spending of democratic party(\$m) <sup>a</sup>	Presidential spending of republican party(\$m) <sup>b</sup>	Ratio of incumbent/non-incumbent <sup>c</sup>	Ordinal number <sup>d</sup>
1952	Democratic	5.018	9.74	0.515195	0
1956	Republican	6.2725	18.7	2.981267	2
1960	Republican	9.8	10.1	1.030612	1
1964	Democratic	8.8	16	0.55	0
1968	Democratic	11.6	25.4	0.456693	0
1972	Republican	30	61.4	2.046667	2
1976	Republican	33.4	35.8	1.071856	1
1980	Democratic	49	57.7	0.84922	0
1984	Republican	66.7	67.5	1.011994	1
1988	Republican	77.3	80	1.034929	1
1992	Republican	107.9	97.4	0.902688	0
1996	Democratic	115.4	66.8	1.727545	1
2000	Democratic	120.3	186.5	0.64504	0
2004	Republican	332.7	355	1.067027	1
2008	Republican	760.4	239.7	0.315229	0
2012	Democratic	737.1	483.1	1.525771	1
2016	Democratic	220	68.8	3.197674	3

(Source: For 1960 onwards: <http://metrocosm.com/the-history-of-campaign-spending/>;  
For 1952: <https://library.cqpress.com/cqalmanac/document.php?id=cqal53-1365614>  
For 1956: <https://library.cqpress.com/cqalmanac/document.php?id=cqal61-879-29204-1371803>)

**Table 8-Period Of Power Factor**

Election Year	Incumbent Party	Period of power factor
1952	Democratic	1
1956	Republican	0
1960	Republican	1
1964	Democratic	0
1968	Democratic	1
1972	Republican	0
1976	Republican	1
1980	Democratic	0
1984	Republican	0
1988	Republican	1
1992	Republican	1
1996	Democratic	0
2000	Democratic	1
2004	Republican	0
2008	Republican	1
2012	Democratic	0
2016	Democratic	1

(Source: our Research)

**Table 9-President Running**

Election Year	Incumbent Party	President Running
1952	Democratic	0
1956	Republican	1
1960	Republican	0
1964	Democratic	0
1968	Democratic	0
1972	Republican	1
1976	Republican	1
1980	Democratic	1
1984	Republican	1
1988	Republican	0
1992	Republican	1
1996	Democratic	1
2000	Democratic	0
2004	Republican	1
2008	Republican	0
2012	Democratic	1
2016	Democratic	0

(Source : our research)

**Table 10-Vote Share**

Election Year	Incumbent	Incumbent Party	Non- Incumbent Major Opposition Party
1952	Democratic	44.33	55.18
1956	Republican	57.37	41.97
1960	Republican	49.55	49.72
1964	Democratic	61.05	38.47
1968	Democratic	42.72	43.42
1972	Republican	60.67	37.52
1976	Republican	48.01	50.08
1980	Democratic	41.01	50.75
1984	Republican	58.77	40.56
1988	Republican	53.37	45.65
1992	Republican	37.45	43.01
1996	Democratic	49.23	40.72
2000	Democratic	48.38	47.87
2004	Republican	50.73	48.26
2008	Republican	45.6	52.86
2012	Democratic	51.01	47.15
2016	Democratic		

(Source: [www.uselectionatlas.org](http://www.uselectionatlas.org))